

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

LEIDNER et al.

Application No.: Continuation of 09/388,181

Art Unit: Unassigned

Examiner: Unassigned

Filed: Herewith

For: ERASABLE
COLORED PENCIL
LEAD

CLAIMS PENDING AFTER PRELIMINARY AMENDMENT

1. An erasable colored pencil lead composition comprising a colorant, one or more binder resins, a fibrillatable or fibrillated material, an antioxidant, and a filler, wherein said composition is substantially free of low melting waxes or waxy materials having a melting or softening point of about 90°C or below.
4. The erasable colored pencil lead composition of claim 1, wherein said low melting waxes or waxy materials have a needle penetration hardness value of 5 units or above.
5. The erasable colored pencil lead composition of claim 1, wherein said binder resin is a polyolefin.
6. The erasable colored pencil lead composition of claim 5, wherein said polyolefin is selected from the group consisting of polypropylene, high density polyethylene, low density polyethylene, high melting polyolefin waxes, and combinations thereof.
7. The erasable colored pencil lead composition of claim 6, wherein said polyolefin is combination of a polypropylene, a low density polyethylene, and a high melting polyethylene wax.

8. The erasable colored pencil lead composition of claim 1, wherein said fibrillatable or fibrillated material is a fibrillatable or fibrillated polymer.

9. The erasable colored pencil lead composition of claim 8, wherein said fibrillatable or fibrillated polymer is a fibrillatable or fibrillated copolymer.

10. The erasable colored pencil lead composition of claim 9, wherein said fibrillatable or fibrillated copolymer is a fibrillatable or fibrillated ethylene-vinyl acetate copolymer.

11. The erasable colored pencil lead composition of claim 1, including a lubricant.

12. The erasable colored pencil lead composition of claim 11, wherein said lubricant is a non-particulate lubricant.

13. The erasable colored pencil lead composition of claim 12, wherein said non-particulate lubricant forms a separate domain from the binder resin.

14. The erasable colored pencil lead composition of claim 13, wherein said non-particulate lubricant is a polar material.

15. The erasable colored pencil lead composition of claim 14, wherein said polar material is an alkoxyated material.

16. The erasable colored pencil lead composition of claim 15, wherein said alkoxyated material is selected from the group consisting of polyalkylene glycols, alkoxyated ethers, alkoxyated lanolin, alkoxyated lanolin alcohols, alkoxyates of mono- and polyhydric alcohols, alkoxyated fatty acids, alkoxyated vegetable oils, alkoxyated hydrogenated vegetable oils, and combinations thereof.

17. The erasable colored pencil lead composition of claim 15, wherein said alkoxyated material is an ethoxylated material.

18. The erasable colored pencil lead composition of claim 17, wherein said ethoxylated material is selected from the group consisting of polyethylene glycols, ethoxylated ethers, ethoxylated lanolin, ethoxylated lanolin alcohols, ethoxylates of mono- and polyhydric alcohols, ethoxylated fatty acids, ethoxylated vegetable oils, ethoxylated hydrogenated vegetable oils, and combinations thereof.

19. The erasable colored pencil lead composition of claim 18, wherein said ethoxylated material is polyethylene glycol.

22. A method for using an erasable colored pencil lead composition on a surface to be marked, the method comprising:

- (a) providing an erasable colored pencil lead composition which is capable of forming a cohesive layer of the composition when applied to the surface as a mark;
- (b) providing the surface; and
- (c) applying the lead to the surface to create a mark.

23. The method of claim 22, wherein said erasable colored pencil lead composition comprises a colorant, one or more binder resins, a fibrillatable or fibrillated material, and a filler.

24. The method of claim 23, wherein said erasable colored pencil lead composition includes a lubricant.

25. The method of claim 24, wherein said lubricant forms a separate domain from at least one of the binder resins.

26. The method of claim 25, wherein said at least one of the binder resins is a polyolefin.

27. The method of claim 24, wherein said lubricant is a polar material.
28. The method of claim 27, wherein said polar material is an alkoxyated material.
29. The method of claim 28, wherein said alkoxyated material is selected from the group consisting of polyalkylene glycols, alkoxyated ethers, alkoxyated lanolin, alkoxyated lanolin alcohols, alkoxyates of mono- and polyhydric alcohols, alkoxyated fatty acids, alkoxyated vegetable oils, alkoxyated hydrogenated vegetable oils, and combinations thereof.
30. The method of claim 28, wherein said alkoxyated material is an ethoxyated material.
31. The method of claim 30, wherein said ethoxyated material is selected from the group consisting of polyethylene glycols, ethoxyated ethers, ethoxyated lanolin, ethoxyated lanolin alcohols, ethoxyates of mono- and polyhydric alcohols, ethoxyated fatty acids, ethoxyated vegetable oils, ethoxyated hydrogenated vegetable oils, and mixtures thereof.
32. The method of claim 31, wherein said ethoxyated material is polyethylene glycol.
33. The method of claim 23, wherein said erasable colored pencil lead composition includes an antioxidant.
34. The method of claim 22, wherein said erasable colored pencil composition is substantially free of low melting waxes or waxy materials having a melting or softening point of about 90°C or below.
35. The method of claim 22, further comprising erasing said mark using an ordinary pencil eraser.
36. The method of claim 23, wherein at least one of said binder resins is a polyolefin.

37. The method of claim 28, wherein said fibrillatable or fibrillated material is a fibrillatable or fibrillated polymer.

38. The method of claim 37, wherein said polymer is a fibrillatable or fibrillated copolymer.

39. The method of claim 38, wherein said fibrillatable or fibrillated copolymer is a fibrillatable or fibrillated ethylene-vinyl acetate copolymer.

40. The method of claim 22, wherein said surface is a porous surface.

41. The method of claim 40, wherein said porous surface is paper.

69. An erasable colored pencil lead composition capable of producing on a White Bond paper a second mark having a not erased rating of about 15% or less, wherein said second mark is formed by erasing a first mark produced on said paper under a constant applied force which is in the range of 300-600 g with an ordinary pencil eraser applied to said first mark under a constant applied force of 600 g.

70. The erasable colored pencil lead composition of claim 69, wherein a third mark is formed by erasing said second mark, said third mark having an eraser smear rating of about 30% or less wherein the eraser is extended outside said first mark on the paper to a distance equal to the distance erased on said first mark to create said third mark.

71. The erasable colored pencil lead composition of claim 69, wherein said first mark has a blending stump smudging rate of about 20% or less, wherein said blending stump is used to rub said first mark under a constant applied force of 1200 g and the stump was extended outside said first mark on the paper to a distance equal to the distance rubbed on the mark.

72. The erasable colored pencil lead composition of claim 69, wherein a third mark is formed by erasing said second mark, said third mark having an eraser smear rating of about

20% or less wherein the eraser is extended outside said first mark on the paper to a distance equal to the distance erased on said first mark to create said third mark.

73. An erasable colored pencil lead composition which is capable of forming a cohesive layer when applied to a surface.

74. The erasable colored pencil lead composition of claim 73, which comprises a colorant, one or more binder resins, a fibrillatable or fibrillated material, and a filler.

75. The erasable colored pencil lead composition of claim 74, including a lubricant.

76. The erasable colored pencil lead composition of claim 75, wherein said lubricant forms a separate domain from at least one of the binder resins.

77. The erasable colored pencil lead composition of claim 76, wherein said at least one of the binder resins is a polyolefin.

78. The erasable colored pencil lead composition of claim 75, wherein said lubricant is a polar material.

79. The erasable colored pencil lead composition method of claim 78, wherein said polar material is an alkoxyated material.

80. The erasable colored pencil lead composition of claim 79, wherein said alkoxyated material is selected from the group consisting of polyalkylene glycols, alkoxyated ethers, alkoxyated lanolin, alkoxyated lanolin alcohols, alkoxyates of mono- and polyhydric alcohols, alkoxyated fatty acids, alkoxyated vegetable oils, alkoxyated hydrogenated vegetable oils, and combinations thereof.

81. The erasable colored pencil lead composition of claim 79, wherein said alkoxyated material is an ethoxyated material.

82. The erasable colored pencil lead composition of claim 81, wherein said ethoxylated material is selected from the group consisting of polyethylene glycols, ethoxylated ethers, ethoxylated lanolin, ethoxylated lanolin alcohols, ethoxylates of mono- and polyhydric alcohols, ethoxylated fatty acids, ethoxylated vegetable oils, ethoxylated hydrogenated vegetable oils, and mixtures thereof.

83. The erasable colored pencil lead composition of claim 82, wherein said ethoxylated material is polyethylene glycol.

84. The erasable colored pencil lead composition of claim 74, including an antioxidant.

85. The erasable colored pencil lead composition of claim 73, which is substantially free of low melting waxes or waxy materials having a melting or softening point of about 90°C or below.

86. The erasable colored pencil lead composition of claim 74, wherein at least one of said binder resins is a polyolefin.

87. The erasable colored pencil lead composition of claim 79, wherein said fibrillatable or fibrillated material is a fibrillatable or fibrillated polymer.

88. The erasable colored pencil lead composition of claim 87, wherein said polymer is a fibrillatable or fibrillated copolymer.

89. The erasable colored pencil lead composition of claim 88, wherein said fibrillatable or fibrillated copolymer is a fibrillatable or fibrillated ethylene-vinyl acetate copolymer.

90. The erasable colored pencil lead composition of claim 73, wherein said surface is a porous surface.

$\frac{d}{dt} \left(\frac{\partial L}{\partial \dot{x}} \right) = \frac{\partial L}{\partial x}$, $\frac{d}{dt} \left(\frac{\partial L}{\partial \dot{y}} \right) = \frac{\partial L}{\partial y}$, $\frac{d}{dt} \left(\frac{\partial L}{\partial \dot{z}} \right) = \frac{\partial L}{\partial z}$